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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,817	01/11/2001	Robert E. Balfour	P/ 3588 - 2	9253

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EXAMINER

GOOD JOHNSON, MOTILEWA

ART UNIT	PAPER NUMBER
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2672

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/758,817

Applicant(s)

BALFOUR, ROBERT E.

Examiner

Motilewa A. Good-Johnson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is responsive to the following communications: Application, filed 01/11/2001; IDS, paper # 2, filed 04/12/2001; IDS, paper # 4, filed 05/16/2001.
2. Claims 1-39 are pending in this application. Claims 1 and 32 are independent claims.
3. The present title of the application is "Method and System for a Four-Dimensional Temporal Visualization Data Browser" (as originally filed).

Continued Examination Under 37 CFR 1.114

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/06/2004 has been entered.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Si et al., *4DIS: A Temporal Framework for Unifying Meta-Data and Data Evolution*, ACM 1998, pages 203-210, in view of Luttermann, *VRML History: Storing and Browsing Temporal 3D-Worlds*, ACM 1999, pages 153-181.

Regarding claim 1, Si discloses a system to interactively access and analyze temporal data relationships that change over time, the system comprising: one or more 4D portal storage mediums (abstract) containing 4D portal information, the 4D portal information representing at least three spatial dimensions and a time dimension (page 206, section 3.2, 1st paragraph, extending a three dimensional model by a fourth temporal dimension)

However, it is noted that Si fails to disclose one or more 4D browser programs adapted to access the one or more 4D portal storage mediums and convert the 4D portal information contained therein into one or more 4D objects rendered in a 3D scene wherein the one or more 4D browser programs are further adapted to use the 4D portal information to render and manipulate at least one of a temporal and spatial manifestation of the one or more 4D object independent of the 3D scene, and wherein the one or more 4D portal browser program are further adapted to enable a user to simulate traveling back and forth through the time dimension to represent the 4D object at one or more particular times; and one or more 4D portal windows adapted to receive and display the 4D objects in the 3D scene

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Luttermann discloses one or more 4D browser programs adapted to access the one or more 4D portal storage mediums and convert the 4D portal information contained therein into one or more 4D objects rendered in a 3D scene (page 157, section 5.2, a navigation is prompted by the view through the browsers GUI or by a scene graph to identify objects and versions) wherein the one or more 4D browser programs are further adapted to use the 4D portal information to render and manipulate at least one of a temporal and spatial manifestation of the one or more 4D object independent of the 3D scene (page 157, section 5.3, allowing the user to change, through the navigation controls, valid time periods), and wherein the one or more 4D portal browser program are further adapted to enable a user to simulate traveling back and forth through the time dimension to represent the 4D object at one or more particular times (page 157, section 5.3, different modes such as slow or fast, and forward or backward); and one or more 4D portal windows adapted to receive and display the 4D objects in the 3D scene (figure 4)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in the creation and modifications of the 4D objects, as disclosed in Si et al, the browsing and temporal 3D scene as disclosed in Luttermann, to allow visualization of time-referenced data represented through browser files.

Regarding claim 2, Si et al. discloses one or more information databases from which the 4D portal information is derived. (page 203, section 1, paragraph 6, a 4DIS database)

Regarding claim 3, Si discloses wherein the 4D portal information includes

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4D object definitions, 4D object attributes, 4D object actions and 4D object time-stamped audit trail data (page 205-206, the 3DIS model includes a descriptive and class information, which Examiner interprets as object definitions, composite objects describing entities of environments, which Examiner interprets as object attributes, and mapping considered as meta-data, which Examiner interprets as inclusive of object attributes, and on page 206, the 4DIS information is an extension of the 3DIS information including a temporal dimension, which notes an objects evolution over time, which Examiner interprets as a time-stamp audit trail. Furthermore Luttermann discloses time stamping, page 154, and section 2.2)

Regarding claim 4, Si discloses wherein the 4D portal information is augmented with spatial manifestation definitions, guideway definitions and 3D visual models for each 4D object definition. (page 205, each database is viewed graphically by a 3D geometric representation, which each dimension representing the objects as a point in the 3D space for the geometric components, which Examiner interprets as augmented a spatial manifestation definition, guide way definition and a 3D visual, see also figures 2 and 3)

Regarding claim 5, Luttermann discloses wherein the 4D browser program creates an interactive 3D computer-generated scene in one or more 4D portal windows that is manipulated by one or more users of the system. (pages 157-158, navigation instruments, which allow a user to change time and visualization of the temporal data, figure 4, which provides a user with data stored for user explorations)

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Regarding claim 6, Luttermann discloses a communications system connected between the one or more 4D portal storage mediums and one or more 4D browser programs, the communications system being adapted to process 4D portal information into 4D object states and transmit the 4D portal information and the 4D object states to one or more 4D browser programs. (page 159, section 8, storing and browsing spatial-temporal objects in VRML files on the WWW, which Examiner interprets as a communication system, and browsing them spatially and temporally by a time navigation instrument)

Regarding claims 7 and 8, Si discloses wherein the 4D portal information represents a physical object, abstract dataset represented by geometric shapes. (page 205, each database is viewed graphically by a 3D geometric representation, which each dimension representing the objects as a point in the 3D space for the geometric components)

Regarding claim 9, Luttermann discloses wherein the 4D portal information is organized in a spatial hierarchy (page 155, section 4.4)

Regarding claim 10, Si discloses wherein the 4D object attributes correspond to one or more data fields of the information database from which the 4D portal information is derived (page 205, section 3.1, the 3DIS model supports the representation of symbolic constants in a database)

Regarding claim 11, Si discloses wherein the 4D object attributes are calculated by applying a function to one or more data fields of the information database. (page 207, 1st paragraph, functions may be used to relate between attributes)

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Regarding claim 12, Si discloses wherein the 4D object actions represent events in time, which effect one or more 4D object attributes. (page 206, paragraphs 6-7, data evolution is continuous and the information of an object is not duplicated for an attribute until the following chronon object in time)

Regarding claim 13, Si discloses wherein the 4D object attributes and 4D object actions are associated with one or more spatial manifestation definitions. (figures 2 and 3)

Regarding claim 14, Si discloses wherein the spatial manifestation definitions include insertion/removal of a 4D object. (page 207, section 3.2.1, 2nd paragraph, when the relationship is changed for a mapped object the relationship will be generated in the 4D space automatically)

Regarding claim 15, Luttermann discloses wherein the spatial manifestation definitions further include 4D temporal fade in/out and guideway translation/orientation definitions utilized by the 4D browser program to manipulate one or more 4D objects in the 3D scene. (page 157, section 5.2, a navigation action of through the browser's GUI to manipulate and change the valid time of the viewpoint and traversing the scene graph to identify positioning in the current view, which Examiner interprets as a guideway translation/orientation and a temporal fade in/out)

Regarding claim 16, Luttermann discloses wherein the spatial manifestation definitions are static. (page 157, section 5.3, time display allows a user to view temporal changes in a step-wise mode, which Examiner interprets as a static spatial manifestation)

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Regarding claim 17, Luttermann discloses wherein the spatial manifestation definitions are progressive. (page 157, section 5.3, time display allows a user to view temporal changes in a continuous mode, which Examiner interprets as a progressive spatial manifestation)

Regarding claim 18, Luttermann discloses wherein the 4D browser program includes access privileges to the 4D storage mediums, and wherein the communications system is further adapted to validate the 4D browser program access privileges to the 4D storage mediums in response to a request for access by one or more of the 4D browser programs. (page 157, section 5.2, valid time for the browser temporal visualization)

Regarding claim 19, Luttermann discloses wherein the access privileges to the 4D storage mediums include open, query, select, update and close, and wherein the communication system responds to the request for access by retrieving the corresponding 4D portal information from the 4D portal storage medium. ()

Regarding claim 20, Luttermann discloses wherein the communication system processes the 4D portal information into 4D object states and webpage content and transmits the 4D portal information, the 4D object states and the webpage content to the 4D browser program according to the request for access. (page 159, section 8, storing and browsing spatial-temporal objects in VRML files on the WWW, which Examiner interprets as a communication system, and browsing them spatially and temporally by a time navigation instrument)

Regarding claim 21, Luttermann discloses wherein the 4D browser program is further adapted to generate 4D object states from the 4D portal information. (page 159, 1st paragraph, the VRML, i.e. browser program, can reproduce the spatial and temporal base points)

Regarding claim 22, Luttermann discloses wherein the 4D portal information is temporally and spatially binned so as to represent time frames of the 4D object states at selectable temporal resolutions of the 4D objects in selectable levels in a spatial hierarchy. (figure 4)

Regarding claim 23, Luttermann discloses wherein the 4D browser program is connected between the one or more 4D portal windows by a shared electronic network system. (figure 2)

Regarding claim 24, Luttermann discloses wherein the communications system is connected between the one or more 4D portal storage mediums and the one or more 4D browser programs by a shared electronic network system. (page 158, section 6.1 the VRML uses stored data to implement a visualization of temporal data)

With respect to dependent claim 25, Luttermann discloses wherein the guide way definitions and the 3D visual models of each 4D object definition are spatially referenced to and visually rendered in the 4D portal windows. (figure 4)

Regarding claim 26, Luttermann discloses wherein the 4D browser program is further adapted to provide an interactive time control which specifies a starting time value and an ending time value for the fourth time dimension by moving the time control forward or backward in selectable time increments, process the 4D portal

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information corresponding to the time increment between the starting time value and the ending time value so as to maintain a temporal context of the one or more 4D objects in the 3D scene, and utilize the temporal context to determine the one or more spatial manifestations to be applied to the one or more 4D objects in the 3D scene between the starting time value and the ending time value. (page 157-158, an interactive time line as a navigations control to allow the user to change the current valid tie including forward or backward, slow or fast)

Regarding claims 27 and 28, Luttermann discloses wherein the 4D browser program is further adapted to modify the 4D portal information and save the modifications on the one or more 4D portal storage mediums. (page 159)

Regarding claim 29, Luttermann discloses wherein the time frames include one or more time masks, which specify repeating time periods. (page 159, reusing existing objects of the description)

Regarding claim 30, Luttermann discloses wherein the 4D browser program is further adapted to enable the selection of a temporal and spatial manifestation of a 4D object in the 3D scene with a pointing device. (page 157, using a browser's GUI to enable the selection of an action change)

Regarding claim 31, Luttermann discloses wherein the 4D browser program is further adapted to save the 3D scene each time the 3D scene is rendered in the 4D portal window as 4D objects are manipulated temporally or spatially. (page 159)

Regarding claims 32-38, see above rejection for claims 1, 3, 4, 9 and 27.

Regarding claim 39, Si discloses wherein the 4D portal database is generated by a database management system. (page 210, a 4DIS storage manager)

Response to Arguments

7. Applicant's arguments with respect to claims 1-39 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Motilewa A. Good-Johnson whose telephone number is (703) 305-3939. The examiner can normally be reached on Monday - Friday 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (703) 305-4713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

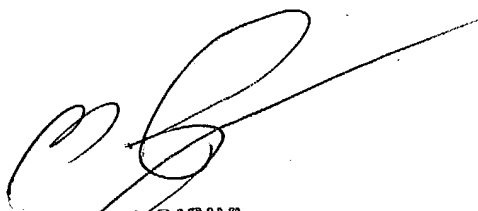
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